

REMARKS

The Office Action mailed March 13, 2002, has been received and reviewed.

Applicants note the filing of a Supplemental Information Disclosure Statement herein on March 4, 2002 and note that no copy of the PTO-1449 was returned with the outstanding Office Action. Applicants respectfully request that the information cited on the PTO-1449 (which is the same as that of record to that date in the parent application hereto) be made of record herein.

Claims 1 through 20 are currently pending in the application, of which claims 1 and 10 are independent. Claims 1 through 20 stand rejected.

35 U.S.C. § 112 Claim Rejections

Claims 9 and 20 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicants respectfully traverse this rejection, as hereinafter set forth.

In particular, dependent claims 9 and 20 recite “wherein said TEOS layer comprises a dopant barrier between said capacitor structure and said insulating layer.” Such claim limitation is expressly described in both the specification and the figures. For example, in the Applicants’ Specification on page 9, paragraph 42, it states:

The presence of the TEOS layer 76 moves the stress away from the nitride/BPSG interface to the TEOS/BPSG interface. The result is that the cell polycrystalline silicon 70 is no longer exposed during the pre-metal clean/wet etch. The TEOS film 76 prevents dopant mixing or “pile up” (an increase in the concentration of dopants in a particular location). Thus, the layer 76 provides a stress buffer and dopant barrier in the form of a TEOS film that is deposited after the capacitor cell plate 70 is etched and cleaned. (Emphasis added)

Furthermore, Applicants’ drawing FIG. 10 illustrates the TEOS layer 76 between the capacitor structure and insulating layer 78.

Applicants therefore respectfully request that the rejection of dependent claims 9 and 20 under 35 U.S.C. § 112, first paragraph, be withdrawn.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 6,274,423 to Prall et al. in view of U.S. Patent No. 6,124,626 to Sandhu et al.

Claims 1 through 4, 6 through 8, 10 through 15, and 17 through 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Prall et al. (U.S. Patent No. 6,274,423) in view of Sandhu et al. (U.S. Patent No. 6,124,626). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In the rejection, it is acknowledged that the Prall reference is deficient by stating "Prall et al. fails to show a TEOS layer disposed between the BPSG layer and the capacitor structure." To overcome this deficiency in the Prall reference, the Examiner relies on the Sandhu reference disclosing a TEOS layer disposed over a capacitor structure. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to dispose the TEOS layer in the Sandhu reference over the capacitor structure in the Prall reference in order "to wrap around difficult edges, plates and provide dielectric oxygen loss protection." Office Action, page 4, lines 4-10.

Applicants traverse this rejection for at least two reasons. First, a person of ordinary skill in the art would not have been motivated to make the proposed modification; and second, the prior art as applied does not, in combination, teach or suggest each and every claim limitation.

Turning to the first issue, a person of ordinary skill in the art would not have been motivated to make the proposed modification. In particular, the Prall reference teaches a capacitor structure including a capacitor dielectric 44 and a cell poly 46 formed thereon, wherein a horizontal region 50 of the cell poly 46 and capacitor dielectric 44 are etched away. See Prall, col. 6, line 53 - col. 7, line 29; FIGS. 16-20. However, there is nothing in the Prall reference that teaches or suggests forming a TEOS layer over the capacitor structure. In fact, nowhere in the Prall reference is there any reference whatsoever to a TEOS material.

The Examiner refers to the Sandhu reference for its teaching of a TEOS layer 57, suggesting that the TEOS layer 57 overlying an edge 55 of the capacitor structure 30 would motivate one of ordinary skill in the art to modify the structure in the Prall reference with such TEOS layer 57. While the Sandhu reference teaches a TEOS layer 57, the Sandhu reference merely teaches that “the [TEOS] layer 57 can wrap around otherwise difficult edges, plates, etc. (e.g., edge 55 of electrode 52) . . .” Sandhu, col. 6, lines 47-49. However, edge 55 of the capacitor structure 30 is merely the edge formed from layering the container storage node 48. Further, the Sandhu reference expressly teaches forming the TEOS layer 57 over the capacitor structure 30, wherein dielectric material 50 and electrode 52 of the capacitor structure are not etched prior to forming the TEOS layer 57 thereon. See Sandhu, col. 6, lines 36-57; FIG. 2. As such, the Sandhu reference does not teach or suggest forming a TEOS layer over layers, i.e., dielectric material 50, electrode 52, that have been partially etched away.

Thus, a person of ordinary skill in the art would not have been motivated to provide the TEOS layer 57 of the Sandhu reference as a modification to the capacitor structure (including the etched back portions) disclosed in the Prall reference, as the Examiner suggests. Thus, only one conclusion can be reached: the modification proposed by the Examiner is being made only in light of the Examiner’s knowledge of Applicants’ disclosure, and not from the objective teachings in the prior art.

Turning to the second issue, neither the Prall reference nor the Sandhu reference teach or suggest each and every claim limitation of independent claim 1. Independent claim 1 recites, *inter alia*, as follows:

a TEOS layer disposed over said capacitor structure and encasing said end portions of said dielectric layer and said conductive cell plate, said TEOS layer disposed between said capacitor structure and said conductive contact.

As acknowledged by the Examiner, the Prall reference does not teach or suggest a TEOS layer disposed over a capacitor structure. In addition, the Sandhu reference does not teach or suggest "a TEOS layer . . . encasing said end portions of said dielectric layer and said conductive cell plate, said TEOS layer disposed between said capacitor structure and said conductive contact," as recited in claim 1. In fact, the Sandhu reference teaches away from such claim limitation since the Sandhu reference teaches a TEOS layer formed over said capacitor structure without any prior etching of the layers thereunder. See Sandhu, col. 6, lines 36-57; FIG. 2. Thus, Sandhu does not teach or suggest the TEOS layer 57 encasing end portions of the dielectric material 50 and electrode 52.

Based on the foregoing reasons, the rejection of independent claim 1 based on the Prall reference and the Sandhu reference does not satisfy a *prima facie* case of obviousness. Thus, Applicants respectfully request the rejection of independent claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Prall in view of Sandhu be withdrawn.

In addition, independent claim 10 recites claim limitations similar to that recited in independent claim 1. Therefore, independent claim 10 should be patentable for the same reasons as independent claim 1. With respect to dependent claims 2 through 4, 6 through 8, 11 through 15, and 17 through 19, they are each patentable based on at least their respective dependencies from independent claims 1 and 10.

Obviousness Rejection Based on U.S. Patent No. 6,274,423 to Prall et al. in view of U.S. Patent No. 6,124,626 to Sandhu et al., and further in view of U.S. Patent No. 5,763,306 to Tsai

Claims 5 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Prall et al. (U.S. Patent No. 6,274,423) in view of Sandhu et al. (U.S. Patent No. 6,124,626), and further in view of Tsai (U.S. Patent No. 5,763,306). However, as indicated above, the rejection of independent claim 1 and 10 based on the Prall reference and the Sandhu reference do not

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satisfy a *prima facie* case of obviousness. Thus, dependent claims 5 and 16 are patentable based on at least their dependency from independent claims 1 and 10, respectively.

CONCLUSION

Claims 1 through 20 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully Submitted,



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